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<110> Bristol-Myers Squibb Company

<120> Novel Organic Anion Transport Proteins

<130> DB23 DIV1

<140> US 10/736,936

<141> 2003-12-16

<150> US 09/575,081

<151> 2000-05-19

<150> US 60/135,081

<151> 1999-05-20

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<170> PatentIn version 3.2

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Val Phe Pro Arg Val Leu Leu Gln Thr Leu Arg His Pro Ile Phe Leu
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Ala Thr Phe Leu Pro Lys Phe Leu Glu Arg Gln Phe Ser Ile Thr Ala
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Ser Tyr Ala Asn Leu Leu Ile Gly Cys Leu Ser Phe Pro Ser Val Ile
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Val Gly Ile Val Val Gly Gly Val Leu Val Lys Arg Leu His Leu Gly
 405 410 415

Pro Val Gly Cys Gly Ala Leu Cys Leu Leu Gly Met Leu Leu Cys Leu
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Ala Gly Ile Thr His Gln Thr Ser Ala His Pro Gly Leu Glu Leu Ser
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Val Cys Asp Pro Ser Thr Arg Val Glu Tyr Ile Thr Pro Cys His Ala
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Gly Cys Ser Ser Trp Val Val Gln Asp Ala Leu Asp Asn Ser Gln Val
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Phe Tyr Thr Asn Cys Ser Cys Val Val Glu Gly Asn Pro Val Leu Ala
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Phe Met Leu Ile Leu Arg Gly Val Lys Lys Glu Asp Lys Thr Leu Ala
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Val Gly Ile Gln Phe Met Phe Leu Arg Ile Leu Ala Trp Met Pro Ser
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Pro Val Ile His Gly Ser Ala Ile Asp Thr Thr Cys Val His Trp Ala
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Leu Ser Cys Gly Arg Arg Ala Val Cys Arg Tyr Tyr Asn Asn Asp Leu
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Leu Arg Asn Arg Phe Ile Gly Leu Gln Phe Phe Phe Lys Thr Gly Ser
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Val Ile Cys Phe Ala Leu Val Leu Ala Val Leu Arg Gln Gln Asp Lys
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 Cys Ala Leu Met Leu Ala Gln Gly Thr Val Gly Ala Tyr Leu Val Ser
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 Val Leu Thr Thr Leu Glu Arg Arg Phe Asn Leu Gln Ser Ala Asp Val
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 Gly Val Ile Ala Ser Ser Phe Glu Ile Gly Asn Leu Ala Leu Ile Leu
 80 85 90
 ttc gtg agc tac ttc ggg gca cgc ggg cac cgg ccg cgc ctg atc ggc 519
 Phe Val Ser Tyr Phe Gly Ala Arg Gly His Arg Pro Arg Leu Ile Gly
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 Cys Gly Gly Ile Val Met Ala Leu Gly Ala Leu Leu Ser Ala Leu Pro
 115 120 125
 gag ttc ctg acc cac cag tac aag tac gag gcg ggc gag atc cgc tgg 615
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 ggc gcc gag ggc cgc gac gtc tgc gca gcc aac ggc tcg ggc ggc gac 663
 Gly Ala Glu Gly Arg Asp Val Cys Ala Ala Asn Gly Ser Gly Gly Asp
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 Glu Gly Pro Asp Pro Asp Leu Ile Cys Arg Asn Arg Thr Ala Thr Asn
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cgg	agg	aag	gac	tcc	tcg	ctc	tat	ata	gga	atc	ctg	ttc	acg	atg	ctg	855
Arg	Arg	Lys	Asp	Ser	Ser	Leu	Tyr	Ile	Gly	Ile	Leu	Phe	Thr	Met	Leu	
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Val	Phe	Gly	Pro	Ala	Cys	Gly	Phe	Ile	Leu	Gly	Ser	Phe	Cys	Thr	Lys	
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Ile	Tyr	Val	Asp	Ala	Val	Phe	Ile	Asp	Thr	Ser	Asn	Leu	Asp	Ile	Thr	
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ccg	gac	gac	ccc	cgc	tgg	atc	gga	gcc	tgg	tgg	ggt	ggc	ttt	ctg	ctc	999
Pro	Asp	Asp	Pro	Arg	Trp	Ile	Gly	Ala	Trp	Trp	Gly	Gly	Phe	Leu	Leu	
255					260					265				270		
tgc	ggt	gcc	tta	ctc	ttc	ttc	tct	tcc	ctc	ttg	atg	ttt	ggg	ttt	cca	1047
Cys	Gly	Ala	Leu	Leu	Phe	Phe	Ser	Ser	Leu	Leu	Met	Phe	Gly	Phe	Pro	
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cag	tcc	ctg	ccc	ccg	cac	tca	gac	ccc	gcc	atg	gaa	agc	gag	cag	gcc	1095
Gln	Ser	Leu	Pro	Pro	His	Ser	Asp	Pro	Ala	Met	Glu	Ser	Glu	Gln	Ala	
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Met	Leu	Ser	Glu	Arg	Glu	Tyr	Glu	Arg	Pro	Lys	Pro	Ser	Asn	Gly	Val	
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Leu	Arg	His	Pro	Leu	Glu	Pro	Asp	Ser	Ser	Ala	Ser	Cys	Phe	Gln	Gln	
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ctg	aga	gtg	atc	ccg	aag	gtc	acc	aag	cac	ctg	ctc	tca	aac	cct	gtg	1239
Leu	Arg	Val	Ile	Pro	Lys	Val	Thr	Lys	His	Leu	Leu	Ser	Asn	Pro	Val	
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Phe	Thr	Cys	Ile	Ile	Leu	Ala	Ala	Cys	Met	Glu	Ile	Ala	Val	Val	Ala	
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ggc	ttc	gct	gcc	ttt	ttg	ggg	aag	tac	ctg	gag	cag	cag	ttt	aac	ctc	1335
Gly	Phe	Ala	Ala	Phe	Leu	Gly	Lys	Tyr	Leu	Glu	Gln	Gln	Phe	Asn	Leu	
			370					375					380			
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Thr	Thr	Ser	Ser	Ala	Asn	Gln	Leu	Leu	Gly	Met	Thr	Ala	Ile	Pro	Cys	
		385					390					395				
gct	tgt	ctg	ggt	atc	ttc	ctg	gga	ggt	ctt	ttg	gtg	aag	aag	ctc	agc	1431
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cct gtg gct ggg gtt act gtt ccc tat gga aac agc aca gca cct ggc Pro Val Ala Gly Val Thr Val Pro Tyr Gly Asn Ser Thr Ala Pro Gly 450 455 460			1575
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acc gat tcc ttc act cca gtg tgt ggg gca gat ggc atc acc tac ctg Thr Asp Ser Phe Thr Pro Val Cys Gly Ala Asp Gly Ile Thr Tyr Leu 480 485 490			1671
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tgc ctc acc acc gtc cct gct gag aac gca acc gtg gtt cct gga aaa Cys Leu Thr Thr Val Pro Ala Glu Asn Ala Thr Val Val Pro Gly Lys 515 520 525			1767
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 Ile Leu Tyr Thr Thr Thr Trp Gln Cys Leu Arg Lys Asn Tyr Lys Arg
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 Tyr Ile Lys Asn His Glu Gly Gly Leu Ser Thr Ser Glu Phe Phe Ala
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 Gln Thr His Arg Thr Lys Phe Ile Tyr Asn Leu Glu Asp His Glu Trp
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Thr Thr Leu Glu Arg Arg Phe Asn Leu Gln Ser Ala Asp Val Gly Val
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Ile Ala Ser Ser Phe Glu Ile Gly Asn Leu Ala Leu Ile Leu Phe Val
85 90 95

Ser Tyr Phe Gly Ala Arg Gly His Arg Pro Arg Leu Ile Gly Cys Gly
100 105 110

Gly Ile Val Met Ala Leu Gly Ala Leu Leu Ser Ala Leu Pro Glu Phe
115 120 125

Leu Thr His Gln Tyr Lys Tyr Glu Ala Gly Glu Ile Arg Trp Gly Ala
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Glu Gly Arg Asp Val Cys Ala Ala Asn Gly Ser Gly Gly Asp Glu Gly
145 150 155 160

Pro Asp Pro Asp Leu Ile Cys Arg Asn Arg Thr Ala Thr Asn Met Met
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Tyr Leu Leu Leu Ile Gly Ala Gln Val Leu Leu Gly Ile Gly Ala Thr
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Pro Val Gln Pro Leu Gly Val Ser Tyr Ile Asp Asp His Val Arg Arg
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Lys Asp Ser Ser Leu Tyr Ile Gly Ile Leu Phe Thr Met Leu Val Phe
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Gly Pro Ala Cys Gly Phe Ile Leu Gly Ser Phe Cys Thr Lys Ile Tyr
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Val Ile Pro Lys Val Thr Lys His Leu Leu Ser Asn Pro Val Phe Thr
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Ser Ser Ala Asn Gln Leu Leu Gly Met Thr Ala Ile Pro Cys Ala Cys
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Leu Gly Ile Phe Leu Gly Gly Leu Leu Val Lys Lys Leu Ser Leu Ser
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 Phe Gly Cys Val Asp Ser Ser Gly His Gln Glu Leu Lys Gln Gly Pro
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aag gac tcg gga gga aat aat cac tgg gtc tac ctg gct tta ttc att Lys Asp Ser Gly Gly Asn Asn His Trp Val Tyr Leu Ala Leu Phe Ile 255 260 265	1420
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Pro Val His Leu Asp Gln Asn Asp Pro Arg Phe Ile Gly Asn Trp Trp	
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Ser Gly Phe Leu Leu Cys Ala Ile Ala Met Phe Leu Val Ile Phe Pro	
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Met Phe Thr Phe Pro Lys Lys Leu Pro Pro Arg His Lys Lys Lys Lys	
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Lys Lys Lys Phe Ser Val Asp Ala Val Ser Asp Asp Asp Val Leu Lys	
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Glu Lys Ser Asn Asn Ser Glu Gln Ala Asp Lys Lys Val Ser Ser Met	
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Ser Ala Ile Val Thr Ala Phe Ile Thr Phe Ile Pro Lys Phe Ile Glu	
445 450 455 460	
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465 470 475	
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Ile Ile Val Pro Ser Ala Gly Val Gly Ile Val Leu Gly Gly Tyr Ile	
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gga tgt gaa agc att aat cta ggg ggc ata aac atc cct tat aca aca	2236
Gly Cys Glu Ser Ile Asn Leu Gly Gly Ile Asn Ile Pro Tyr Thr Thr	
525 530 535 540	
gga cct tct ctc acc atg ccc cat agg aat ctg aca gga agc tgc aac	2284

Gly	Pro	Ser	Leu	Thr	Met	Pro	His	Arg	Asn	Leu	Thr	Gly	Ser	Cys	Asn		
				545					550					555			
gtt	aat	tgt	ggg	tgt	aaa	ata	cac	gag	tat	gag	cca	gtc	tgt	gga	tca	2332	
Val	Asn	Cys	Gly	Cys	Lys	Ile	His	Glu	Tyr	Glu	Pro	Val	Cys	Gly	Ser		
			560					565					570				
gat	gga	att	aca	tac	ttt	aac	cct	tgt	ctg	gct	ggc	tgt	gtt	aat	agt	2380	
Asp	Gly	Ile	Thr	Tyr	Phe	Asn	Pro	Cys	Leu	Ala	Gly	Cys	Val	Asn	Ser		
		575					580					585					
ggg	aat	ctt	agc	act	gkg	ata	cgg	aat	tat	aca	gaa	tgc	acc	tgt	gtc	2428	
Gly	Asn	Leu	Ser	Thr	Xaa	Ile	Arg	Asn	Tyr	Thr	Glu	Cys	Thr	Cys	Val		
	590					595					600						
caa	agt	cgc	caa	gtg	atc	act	cca	ccc	acc	gtg	gga	cag	cga	agt	cag	2476	
Gln	Ser	Arg	Gln	Val	Ile	Thr	Pro	Pro	Thr	Val	Gly	Gln	Arg	Ser	Gln		
605					610					615					620		
ctc	cgt	gtg	gtt	att	gtc	aag	act	tat	ctc	aat	gag	aac	ggc	tat	gct	2524	
Leu	Arg	Val	Val	Ile	Val	Lys	Thr	Tyr	Leu	Asn	Glu	Asn	Gly	Tyr	Ala		
				625					630					635			
gtg	tct	ggg	aaa	tgt	aaa	cgg	acc	tgc	aat	act	ctt	atc	cca	ttc	tta	2572	
Val	Ser	Gly	Lys	Cys	Lys	Arg	Thr	Cys	Asn	Thr	Leu	Ile	Pro	Phe	Leu		
			640					645					650				
gtt	ttt	ctt	ttc	ata	gtc	acc	ttc	atc	aca	gca	tgt	gcc	caa	cca	tca	2620	
Val	Phe	Leu	Phe	Ile	Val	Thr	Phe	Ile	Thr	Ala	Cys	Ala	Gln	Pro	Ser		
		655					660					665					
gct	atc	ata	gta	aca	ctc	agg	tcc	gta	gaa	gat	gag	gag	aga	cct	ttt	2668	
Ala	Ile	Ile	Val	Thr	Leu	Arg	Ser	Val	Glu	Asp	Glu	Glu	Arg	Pro	Phe		
	670					675					680						
gca	ctg	gga	atg	cag	ttt	gtt	ttg	ttg	cga	aca	ctt	gca	tac	att	cct	2716	
Ala	Leu	Gly	Met	Gln	Phe	Val	Leu	Leu	Arg	Thr	Leu	Ala	Tyr	Ile	Pro		
685					690				695						700		
act	cca	atc	tac	ttt	gga	gca	gtc	att	gac	acc	acc	tgc	atg	ctc	tgg	2764	
Thr	Pro	Ile	Tyr	Phe	Gly	Ala	Val	Ile	Asp	Thr	Thr	Cys	Met	Leu	Trp		
				705					710					715			
caa	cag	gaa	tgt	ggg	gtg	cag	ggg	tct	tgc	tgg	gag	tac	aac	gtg	acg	2812	
Gln	Gln	Glu	Cys	Gly	Val	Gln	Gly	Ser	Cys	Trp	Glu	Tyr	Asn	Val	Thr		
			720					725					730				
tcg	ttt	cgt	ttt	gtg	tat	ttt	ggg	ttg	gct	gcc	ggc	ctc	aaa	ttc	gtt	2860	
Ser	Phe	Arg	Phe	Val	Tyr	Phe	Gly	Leu	Ala	Ala	Gly	Leu	Lys	Phe	Val		
		735					740					745					
ggg	ttt	att	ttt	att	ttt	ctg	gcc	tgg	tac	tcc	ata	aaa	tac	aag	gag	2908	
Gly	Phe	Ile	Phe	Ile	Phe	Leu	Ala	Trp	Tyr	Ser	Ile	Lys	Tyr	Lys	Glu		
	750					755					760						
gat	gga	ctg	cag	agg	cgg	agg	cag	aga	gaa	ttt	ccc	ctg	agc	acc	gtg	2956	
Asp	Gly	Leu	Gln	Arg	Arg	Arg	Gln	Arg	Glu	Phe	Pro	Leu	Ser	Thr	Val		

765	770	775	780	
agt gag aga gtg gga cac ccc gac aat gcc cgg act aga tct tgc cca				3004
Ser Glu Arg Val Gly His Pro Asp Asn Ala Arg Thr Arg Ser Cys Pro				
	785	790	795	
gct ttc agc acc cag gga gaa ttc cac gaa gag act ggc ctg caa aaa				3052
Ala Phe Ser Thr Gln Gly Glu Phe His Glu Glu Thr Gly Leu Gln Lys				
	800	805	810	
ggg atc cag tgc gca gca cag acc tac ccg ggg ccc ttc cca gaa gca				3100
Gly Ile Gln Cys Ala Ala Gln Thr Tyr Pro Gly Pro Phe Pro Glu Ala				
	815	820	825	
ata agt tcc tct gcg gac ccg ggg ctg gaa gag agc ccc gct gcc ttg				3148
Ile Ser Ser Ser Ala Asp Pro Gly Leu Glu Glu Ser Pro Ala Ala Leu				
	830	835	840	
gag ccg ccc tcc tgaagcttga aaatggaaga atttagtttt gttggttgaa				3200
Glu Pro Pro Ser				
845				
ttgaaaatgg cgacttgaga aacaactgtg ccttcttttc tttctttctt ttttttaacc				3260
tctacagaca caatcctcaa accaacaaaa ctcaagtatac acagccgcta ttcattgagg				3320
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<223>	The 'Xaa' at location 594 stands for Gly, or Val.			
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Ala	Pro	Ala	Thr	Ala	Glu	Ala	Val	Gln	Glu	Arg	Cys	Glu	Pro	Glu	Thr	20	25	30	
Xaa	Arg	Ser	Lys	Ser	Leu	Pro	Val	Leu	Ser	Ser	Ala	Ser	Cys	Arg	Pro	35	40	45	
Ser	Leu	Ser	Pro	Thr	Ser	Gly	Asp	Ala	Asn	Pro	Ala	Phe	Gly	Cys	Val	50	55	60	
Asp	Ser	Ser	Gly	His	Gln	Glu	Leu	Lys	Gln	Gly	Pro	Asn	Pro	Leu	Ala	65	70	75	80
Pro	Ser	Pro	Ser	Ala	Pro	Ser	Thr	Ser	Ala	Gly	Leu	Gly	Asp	Cys	Asn	85	90	95	
His	Arg	Val	Asp	Leu	Ser	Lys	Thr	Phe	Ser	Val	Ser	Ser	Ala	Leu	Ala	100	105	110	
Met	Leu	Gln	Glu	Arg	Arg	Cys	Leu	Tyr	Val	Val	Leu	Thr	Asp	Ser	Arg	115	120	125	
Cys	Phe	Leu	Val	Cys	Met	Cys	Phe	Leu	Thr	Phe	Ile	Gln	Ala	Leu	Met	130	135	140	
Val	Ser	Gly	Tyr	Leu	Ser	Ser	Val	Ile	Thr	Thr	Ile	Glu	Arg	Arg	Tyr	145	150	155	160
Ser	Leu	Lys	Ser	Ser	Glu	Ser	Gly	Leu	Leu	Val	Ser	Cys	Phe	Asp	Ile	165	170	175	
Gly	Asn	Leu	Val	Val	Val	Val	Phe	Val	Ser	Tyr	Phe	Gly	Gly	Arg	Gly	180	185	190	
Arg	Arg	Pro	Leu	Trp	Leu	Ala	Val	Gly	Gly	Leu	Leu	Ile	Ala	Phe	Gly	195	200	205	
Ala	Ala	Leu	Phe	Ala	Leu	Pro	His	Phe	Ile	Ser	Pro	Pro	Tyr	Gln	Ile	210	215	220	

Gln Glu Leu Asn Ala Ser Ala Pro Asn Asp Gly Leu Cys Gln Gly Gly
 225 230 235 240
 Asn Ser Thr Ala Thr Leu Glu Pro Pro Ala Cys Pro Lys Asp Ser Gly
 245 250 255
 Gly Asn Asn His Trp Val Tyr Leu Ala Leu Phe Ile Cys Ala Gln Ile
 260 265 270
 Leu Ile Gly Met Gly Ser Thr Pro Ile Tyr Thr Leu Gly Pro Thr Tyr
 275 280 285
 Leu Asp Asp Asn Val Lys Lys Glu Asn Ser Ser Leu Tyr Leu Ala Ile
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 Met Tyr Val Met Gly Ala Leu Gly Pro Ala Val Gly Tyr Leu Leu Gly
 305 310 315 320
 Gly Leu Leu Ile Gly Phe Tyr Val Asp Pro Arg Asn Pro Val His Leu
 325 330 335
 Asp Gln Asn Asp Pro Arg Phe Ile Gly Asn Trp Trp Ser Gly Phe Leu
 340 345 350
 Leu Cys Ala Ile Ala Met Phe Leu Val Ile Phe Pro Met Phe Thr Phe
 355 360 365
 Pro Lys Lys Leu Pro Pro Arg His Lys Lys Lys Lys Lys Lys Lys Phe
 370 375 380
 Ser Val Asp Ala Val Ser Asp Asp Asp Val Leu Lys Glu Lys Ser Asn
 385 390 395 400
 Asn Ser Glu Gln Ala Asp Lys Lys Val Ser Ser Met Gly Phe Gly Lys
 405 410 415
 Asp Val Arg Asp Leu Pro Arg Ala Ala Val Arg Ile Leu Ser Asn Met
 420 425 430
 Thr Phe Leu Phe Val Ser Leu Ser Tyr Thr Ala Glu Ser Ala Ile Val
 435 440 445
 Thr Ala Phe Ile Thr Phe Ile Pro Lys Phe Ile Glu Ser Gln Phe Gly

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Ile Pro Ala Ser Asn	Ala Ser Ile Tyr Thr	Gly Val Ile Ile Val Pro		
465	470	475		480
Ser Ala Gly Val Gly	Ile Val Leu Gly Gly Tyr	Ile Ile Lys Lys Leu		
	485	490		495
Lys Leu Gly Ala Arg	Glu Ser Ala Lys Leu Ala Met	Ile Cys Ser Gly		
	500	505	510	
Val Ser Leu Leu Cys	Phe Ser Thr Leu Phe Ile Val	Gly Cys Glu Ser		
	515	520	525	
Ile Asn Leu Gly Gly	Ile Asn Ile Pro Tyr Thr	Thr Gly Pro Ser Leu		
	530	535	540	
Thr Met Pro His Arg	Asn Leu Thr Gly Ser Cys	Asn Val Asn Cys Gly		
	545	550	555	560
Cys Lys Ile His Glu	Tyr Glu Pro Val Cys Gly	Ser Asp Gly Ile Thr		
	565	570	575	
Tyr Phe Asn Pro Cys	Leu Ala Gly Cys Val Asn Ser	Gly Asn Leu Ser		
	580	585	590	
Thr Xaa Ile Arg Asn	Tyr Thr Glu Cys Thr Cys Val	Gln Ser Arg Gln		
	595	600	605	
Val Ile Thr Pro Pro	Thr Val Gly Gln Arg Ser	Gln Leu Arg Val Val		
	610	615	620	
Ile Val Lys Thr Tyr	Leu Asn Glu Asn Gly Tyr	Ala Val Ser Gly Lys		
	625	630	635	640
Cys Lys Arg Thr Cys	Asn Thr Leu Ile Pro Phe	Leu Val Phe Leu Phe		
	645	650	655	
Ile Val Thr Phe Ile	Thr Ala Cys Ala Gln Pro Ser	Ala Ile Ile Val		
	660	665	670	
Thr Leu Arg Ser Val	Glu Asp Glu Glu Arg Pro Phe	Ala Leu Gly Met		
	675	680	685	

Gln Phe Val Leu Leu Arg Thr Leu Ala Tyr Ile Pro Thr Pro Ile Tyr
690 695 700

Phe Gly Ala Val Ile Asp Thr Thr Cys Met Leu Trp Gln Gln Glu Cys
705 710 715 720

Gly Val Gln Gly Ser Cys Trp Glu Tyr Asn Val Thr Ser Phe Arg Phe
725 730 735

Val Tyr Phe Gly Leu Ala Ala Gly Leu Lys Phe Val Gly Phe Ile Phe
740 745 750

Ile Phe Leu Ala Trp Tyr Ser Ile Lys Tyr Lys Glu Asp Gly Leu Gln
755 760 765

Arg Arg Arg Gln Arg Glu Phe Pro Leu Ser Thr Val Ser Glu Arg Val
770 775 780

Gly His Pro Asp Asn Ala Arg Thr Arg Ser Cys Pro Ala Phe Ser Thr
785 790 795 800

Gln Gly Glu Phe His Glu Glu Thr Gly Leu Gln Lys Gly Ile Gln Cys
805 810 815

Ala Ala Gln Thr Tyr Pro Gly Pro Phe Pro Glu Ala Ile Ser Ser Ser
820 825 830

Ala Asp Pro Gly Leu Glu Glu Ser Pro Ala Ala Leu Glu Pro Pro Ser
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aaagaggaaa gagaagagat cgctcagggg tgagaccatg cccttcatct tttcttttcc	180
ctaattctcct ctgcttgtgt ccacccacac tctccccacc tggcaaaaatt gttcaaaaatt	240
gctgtggagt ttacctcagt ttctcttttc agtctgtggg gtgtgggtcca tcctcttgct	300
gagcacattg aaaggaactg gctatctttg atctcttcct ccagatcaga gtcaaggaat	360
gtgtttata atg gac act tca tcc aaa gaa aat atc cag ttg ttc tgc aaa	411
Met Asp Thr Ser Ser Lys Glu Asn Ile Gln Leu Phe Cys Lys	
1 5 10	
act tca gtg caa cct gtt gga agg cct tct ttt aaa aca gaa tat ccc	459
Thr Ser Val Gln Pro Val Gly Arg Pro Ser Phe Lys Thr Glu Tyr Pro	
15 20 25 30	
tcc tca gaa gaa aag caa cca tgc tgt ggt gaa cta aag gtg ttc ttg	507
Ser Ser Glu Glu Lys Gln Pro Cys Cys Gly Glu Leu Lys Val Phe Leu	
35 40 45	
tgt gcc ttg tct ttt gtt tac ttt gcc aaa gca ttg gca gaa ggc tat	555
Cys Ala Leu Ser Phe Val Tyr Phe Ala Lys Ala Leu Ala Glu Gly Tyr	
50 55 60	
ctg aag agc acc atc act cag ata gag aga agg ttt gat atc cct tct	603
Leu Lys Ser Thr Ile Thr Gln Ile Glu Arg Arg Phe Asp Ile Pro Ser	
65 70 75	
tca ctg gtg gga gtt att gat ggt agt ttt gaa att ggg aat ctc tta	651
Ser Leu Val Gly Val Ile Asp Gly Ser Phe Glu Ile Gly Asn Leu Leu	
80 85 90	
gtt ata aca ttt gtt agc tac ttt gga gcc aaa ctt cac agg cca aaa	699
Val Ile Thr Phe Val Ser Tyr Phe Gly Ala Lys Leu His Arg Pro Lys	
95 100 105 110	
ata att gga gca ggg tgt gta atc atg gga gtt gga aca ctg ctc att	747
Ile Ile Gly Ala Gly Cys Val Ile Met Gly Val Gly Thr Leu Leu Ile	
115 120 125	
gca atg cct cag ttc ttc atg gag cag tac aaa tat gag aga tat tct	795
Ala Met Pro Gln Phe Phe Met Glu Gln Tyr Lys Tyr Glu Arg Tyr Ser	
130 135 140	
cct tcc tcc aat tcc act ctc agc atc tct ccg tgt ctc cta gag tca	843
Pro Ser Ser Asn Ser Thr Leu Ser Ile Ser Pro Cys Leu Leu Glu Ser	
145 150 155	
agc agt caa tta cca gtt tca gtt atg gaa aaa tca aaa tcc aaa ata	891
Ser Ser Gln Leu Pro Val Ser Val Met Glu Lys Ser Lys Ser Lys Ile	
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agt aac gaa tgt gaa gtg gac act agc tct tcc atg tgg att tat gtt	939
Ser Asn Glu Cys Glu Val Asp Thr Ser Ser Ser Met Trp Ile Tyr Val	
175 180 185 190	
ttc ctg ggc aat ctt ctt cgt gga ata gga gaa act ccc att cag cct	987

Phe	Leu	Gly	Asn	Leu	Leu	Arg	Gly	Ile	Gly	Glu	Thr	Pro	Ile	Gln	Pro	
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ttg	ggc	att	gcc	tac	ctg	gat	gat	ttt	gcc	agt	gaa	gac	aat	gca	gct	1035
Leu	Gly	Ile	Ala	Tyr	Leu	Asp	Asp	Phe	Ala	Ser	Glu	Asp	Asn	Ala	Ala	
			210					215					220			
ttc	tat	att	ggg	tgt	gtg	cag	acg	gtt	gca	att	ata	gga	cca	atc	ttt	1083
Phe	Tyr	Ile	Gly	Cys	Val	Gln	Thr	Val	Ala	Ile	Ile	Gly	Pro	Ile	Phe	
		225					230					235				
ggg	ttc	ctg	tta	ggc	tca	tta	tgt	gcc	aaa	cta	tat	gtt	gac	att	ggc	1131
Gly	Phe	Leu	Leu	Gly	Ser	Leu	Cys	Ala	Lys	Leu	Tyr	Val	Asp	Ile	Gly	
	240					245					250					
ttt	gta	aac	cta	gat	cac	ata	acc	att	acc	cca	aaa	gat	ccc	cag	tgg	1179
Phe	Val	Asn	Leu	Asp	His	Ile	Thr	Ile	Thr	Pro	Lys	Asp	Pro	Gln	Trp	
255					260					265					270	
gta	gga	gcc	tgg	tgg	ctt	ggc	tat	cta	ata	gca	gga	atc	ata	agt	ctt	1227
Val	Gly	Ala	Trp	Trp	Leu	Gly	Tyr	Leu	Ile	Ala	Gly	Ile	Ile	Ser	Leu	
				275					280					285		
ctt	gca	gct	gtg	cct	ttc	tgg	tat	tta	cca	aag	agt	tta	cca	aga	tcc	1275
Leu	Ala	Ala	Val	Pro	Phe	Trp	Tyr	Leu	Pro	Lys	Ser	Leu	Pro	Arg	Ser	
			290					295					300			
caa	agt	aga	gag	gat	tct	aat	tct	tcc	tct	gag	aaa	tcc	aag	ttt	att	1323
Gln	Ser	Arg	Glu	Asp	Ser	Asn	Ser	Ser	Ser	Glu	Lys	Ser	Lys	Phe	Ile	
		305					310					315				
ata	gat	gat	cac	aca	gac	tac	caa	aca	ccc	cag	gga	gaa	aat	gca	aaa	1371
Ile	Asp	Asp	His	Thr	Asp	Tyr	Gln	Thr	Pro	Gln	Gly	Glu	Asn	Ala	Lys	
	320					325					330					
ata	atg	gaa	atg	gca	aga	gat	ttt	ctt	cca	tca	ctg	aag	aat	ctt	ttt	1419
Ile	Met	Glu	Met	Ala	Arg	Asp	Phe	Leu	Pro	Ser	Leu	Lys	Asn	Leu	Phe	
335					340					345					350	
gga	aac	cca	gta	tac	ttc	cta	tat	tta	tgt	aca	agc	act	gtt	cag	ttc	1467
Gly	Asn	Pro	Val	Tyr	Phe	Leu	Tyr	Leu	Cys	Thr	Ser	Thr	Val	Gln	Phe	
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aat	tct	ctg	ttc	ggc	atg	gtg	acg	tac	aaa	cca	aag	tac	att	gag	cag	1515
Asn	Ser	Leu	Phe	Gly	Met	Val	Thr	Tyr	Lys	Pro	Lys	Tyr	Ile	Glu	Gln	
			370					375					380			
cag	tat	gga	cag	tca	tcc	tcc	agg	gcc	aac	ttt	gtg	atc	ggg	ctc	atc	1563
Gln	Tyr	Gly	Gln	Ser	Ser	Ser	Arg	Ala	Asn	Phe	Val	Ile	Gly	Leu	Ile	
		385					390					395				
aac	att	cca	gca	gtg	gcc	ctt	gga	ata	ttc	tct	ggg	ggg	ata	gtt	atg	1611
Asn	Ile	Pro	Ala	Val	Ala	Leu	Gly	Ile	Phe	Ser	Gly	Gly	Ile	Val	Met	
	400					405					410					
aaa	aaa	ttc	aga	atc	agt	gtg	tgt	gga	gct	gca	aaa	ctc	tac	ttg	gga	1659
Lys	Lys	Phe	Arg	Ile	Ser	Val	Cys	Gly	Ala	Ala	Lys	Leu	Tyr	Leu	Gly	

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aaa cct gtc tct tat cat gaa cga gct ctc ttt tca gat tgc aac tca Lys Pro Val Ser Tyr His Glu Arg Ala Leu Phe Ser Asp Cys Asn Ser 465 470 475				1803
aga tgc aaa tgt tca gag aca aaa tgg gaa ccc atg tgc ggt gaa aat Arg Cys Lys Cys Ser Glu Thr Lys Trp Glu Pro Met Cys Gly Glu Asn 480 485 490				1851
gga atc aca tat gta tca gct tgt ctt gct ggt tgt caa acc tcc aac Gly Ile Thr Tyr Val Ser Ala Cys Leu Ala Gly Cys Gln Thr Ser Asn 495 500 505 510				1899
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gca gct tct aaa tcc gga aat tcc tca ggc ata gtg gga aga tgt cag Ala Ala Ser Lys Ser Gly Asn Ser Ser Gly Ile Val Gly Arg Cys Gln 530 535 540				1995
aaa gac aat gga tgt ccc caa atg ttt ctg tat ttc ctt gta att tca Lys Asp Asn Gly Cys Pro Gln Met Phe Leu Tyr Phe Leu Val Ile Ser 545 550 555				2043
gtc atc aca tcc tat act tta tcc cta ggt ggc ata cct gga tac ata Val Ile Thr Ser Tyr Thr Leu Ser Leu Gly Gly Ile Pro Gly Tyr Ile 560 565 570				2091
tta ctt ctg agg tgc att aag cca cag ctt aag tct ttt gcc ttg ggt Leu Leu Leu Arg Cys Ile Lys Pro Gln Leu Lys Ser Phe Ala Leu Gly 575 580 585 590				2139
atc tac aca tta gca ata aga gtt ctt gca gga atc cca gct cca gtg Ile Tyr Thr Leu Ala Ile Arg Val Leu Ala Gly Ile Pro Ala Pro Val 595 600 605				2187
tat ttt gga gtt ttg att gat act tca tgc ctc aaa tgg gga ttt aaa Tyr Phe Gly Val Leu Ile Asp Thr Ser Cys Leu Lys Trp Gly Phe Lys 610 615 620				2235
aga tgt gga agt aga gga tca tgc aga tta tat gat tca aat gtc ttc Arg Cys Gly Ser Arg Gly Ser Cys Arg Leu Tyr Asp Ser Asn Val Phe 625 630 635				2283
aga cat ata tat ttg gga cta act gtg ata ctg ggc aca gtg tca att Arg His Ile Tyr Leu Gly Leu Thr Val Ile Leu Gly Thr Val Ser Ile 640 645 650				2331

Val Gln Pro Val Gly Arg Pro Ser Phe Lys Thr Glu Tyr Pro Ser Ser
 20 25 30

Glu Glu Lys Gln Pro Cys Cys Gly Glu Leu Lys Val Phe Leu Cys Ala
 35 40 45

Leu Ser Phe Val Tyr Phe Ala Lys Ala Leu Ala Glu Gly Tyr Leu Lys
 50 55 60

Ser Thr Ile Thr Gln Ile Glu Arg Arg Phe Asp Ile Pro Ser Ser Leu
 65 70 75 80

Val Gly Val Ile Asp Gly Ser Phe Glu Ile Gly Asn Leu Leu Val Ile
 85 90 95

Thr Phe Val Ser Tyr Phe Gly Ala Lys Leu His Arg Pro Lys Ile Ile
 100 105 110

Gly Ala Gly Cys Val Ile Met Gly Val Gly Thr Leu Leu Ile Ala Met
 115 120 125

Pro Gln Phe Phe Met Glu Gln Tyr Lys Tyr Glu Arg Tyr Ser Pro Ser
 130 135 140

Ser Asn Ser Thr Leu Ser Ile Ser Pro Cys Leu Leu Glu Ser Ser Ser
 145 150 155 160

Gln Leu Pro Val Ser Val Met Glu Lys Ser Lys Ser Lys Ile Ser Asn
 165 170 175

Glu Cys Glu Val Asp Thr Ser Ser Ser Met Trp Ile Tyr Val Phe Leu
 180 185 190

Gly Asn Leu Leu Arg Gly Ile Gly Glu Thr Pro Ile Gln Pro Leu Gly
 195 200 205

Ile Ala Tyr Leu Asp Asp Phe Ala Ser Glu Asp Asn Ala Ala Phe Tyr
 210 215 220

Ile Gly Cys Val Gln Thr Val Ala Ile Ile Gly Pro Ile Phe Gly Phe
 225 230 235 240

Leu Leu Gly Ser Leu Cys Ala Lys Leu Tyr Val Asp Ile Gly Phe Val
 245 250 255

Asn Leu Asp His Ile Thr Ile Thr Pro Lys Asp Pro Gln Trp Val Gly
 260 265 270

Ala Trp Trp Leu Gly Tyr Leu Ile Ala Gly Ile Ile Ser Leu Leu Ala
 275 280 285

Ala Val Pro Phe Trp Tyr Leu Pro Lys Ser Leu Pro Arg Ser Gln Ser
 290 295 300

Arg Glu Asp Ser Asn Ser Ser Ser Glu Lys Ser Lys Phe Ile Ile Asp
 305 310 315 320

Asp His Thr Asp Tyr Gln Thr Pro Gln Gly Glu Asn Ala Lys Ile Met
 325 330 335

Glu Met Ala Arg Asp Phe Leu Pro Ser Leu Lys Asn Leu Phe Gly Asn
 340 345 350

Pro Val Tyr Phe Leu Tyr Leu Cys Thr Ser Thr Val Gln Phe Asn Ser
 355 360 365

Leu Phe Gly Met Val Thr Tyr Lys Pro Lys Tyr Ile Glu Gln Gln Tyr
 370 375 380

Gly Gln Ser Ser Ser Arg Ala Asn Phe Val Ile Gly Leu Ile Asn Ile
 385 390 395 400

Pro Ala Val Ala Leu Gly Ile Phe Ser Gly Gly Ile Val Met Lys Lys
 405 410 415

Phe Arg Ile Ser Val Cys Gly Ala Ala Lys Leu Tyr Leu Gly Ser Ser
 420 425 430

Val Phe Gly Tyr Leu Leu Phe Leu Ser Leu Phe Ala Leu Gly Cys Glu
 435 440 445

Asn Ser Asp Val Ala Gly Leu Thr Val Ser Tyr Gln Gly Thr Lys Pro
 450 455 460

Val Ser Tyr His Glu Arg Ala Leu Phe Ser Asp Cys Asn Ser Arg Cys
 465 470 475 480

Lys Cys Ser Glu Thr Lys Trp Glu Pro Met Cys Gly Glu Asn Gly Ile
 485 490 495

Thr Tyr Val Ser Ala Cys Leu Ala Gly Cys Gln Thr Ser Asn Arg Ser
 500 505 510

Gly Lys Asn Ile Ile Phe Tyr Asn Cys Thr Cys Val Gly Ile Ala Ala
 515 520 525

Ser Lys Ser Ser Gly Asn Ser Ser Gly Ile Val Gly Arg Cys Gln Lys Asp
 530 535 540

Asn Gly Cys Pro Gln Met Phe Leu Tyr Phe Leu Val Ile Ser Val Ile
 545 550 555 560

Thr Ser Tyr Thr Leu Ser Leu Gly Gly Ile Pro Gly Tyr Ile Leu Leu
 565 570 575

Leu Arg Cys Ile Lys Pro Gln Leu Lys Ser Phe Ala Leu Gly Ile Tyr
 580 585 590

Thr Leu Ala Ile Arg Val Leu Ala Gly Ile Pro Ala Pro Val Tyr Phe
 595 600 605

Gly Val Leu Ile Asp Thr Ser Cys Leu Lys Trp Gly Phe Lys Arg Cys
 610 615 620

Gly Ser Arg Gly Ser Cys Arg Leu Tyr Asp Ser Asn Val Phe Arg His
 625 630 635 640

Ile Tyr Leu Gly Leu Thr Val Ile Leu Gly Thr Val Ser Ile Leu Leu
 645 650 655

Ser Ile Ala Val Leu Phe Ile Leu Lys Lys Asn Tyr Val Ser Lys His
 660 665 670

Arg Ser Phe Ile Thr Lys Arg Glu Arg Thr Met Val Ser Thr Arg Phe
 675 680 685

Gln Lys Glu Asn Tyr Thr Thr Ser Asp His Leu Leu Gln Pro Asn Tyr

690

695

700

Trp Pro Gly Lys Glu Thr Gln Leu
705 710

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<213> Homo sapiens

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gaggtcacca ggcgaggcg cgag atg ccc ctg cat cag ctg ggg gac aag 172
Met Pro Leu His Gln Leu Gly Asp Lys
1 5
ccg ctc acc ttc ccc agc ccc aac tca gcc atg gaa aac ggg ctt gac 220
Pro Leu Thr Phe Pro Ser Pro Asn Ser Ala Met Glu Asn Gly Leu Asp
10 15 20 25
cac acc cca ccc agc agg agg gca tcc ccg ggc aca ccc ctg agc ccc 268
His Thr Pro Pro Ser Arg Arg Ala Ser Pro Gly Thr Pro Leu Ser Pro
30 35 40
ggg tcc ctc cgc tcc gct gcc cat agc ccc ctg gac acc agc aag cag 316
Gly Ser Leu Arg Ser Ala Ala His Ser Pro Leu Asp Thr Ser Lys Gln
45 50 55
ccc ctc tgc cag ctc tgg gcc gag aag cat ggc gcc cgg ggg acc cat 364
Pro Leu Cys Gln Leu Trp Ala Gly Lys His Gly Ala Arg Gly Thr His
60 65 70
gag gtg cgg tac gtc tgc gcc ggg cag agc gtg gcg tgc ggc tgg tgg 412
Glu Val Arg Tyr Val Ser Ala Gly Gln Ser Val Ala Cys Gly Trp Trp
75 80 85
gcc ttc gca ccg ccg tgc ctg cag gtc ctc aac acg ccc aag ggc atc 460
Ala Phe Ala Pro Pro Cys Leu Gln Val Leu Asn Thr Pro Lys Gly Ile
90 95 100 105
ctg ttc ttc ctg tgt gcg gcc gca ttc ctg cag ggg atg act gtg aat 508
Leu Phe Phe Leu Cys Ala Ala Ala Phe Leu Gln Gly Met Thr Val Asn
110 115 120
ggc ttc atc aac aca gtc atc acc tcc ctg gag cgc cgc tat gac ctg 556
Gly Phe Ile Asn Thr Val Ile Thr Ser Leu Glu Arg Arg Tyr Asp Leu
125 130 135

cac agc tac cag agc ggg ctc atc gcc agc tcc tac gac att gcc gcc His Ser Tyr Gln Ser Gly Leu Ile Ala Ser Ser Tyr Asp Ile Ala Ala 140 145 150	604
tgc ctc tgc ctc acc ttc gtc agc tac ttc ggg ggc tca ggg cac aag Cys Leu Cys Leu Thr Phe Val Ser Tyr Phe Gly Gly Ser Gly His Lys 155 160 165	652
ccg cgc tgg ctg ggc tgg ggc gtg ctg ctt atg ggc acg ggg tcg ctg Pro Arg Trp Leu Gly Trp Gly Val Leu Leu Met Gly Thr Gly Ser Leu 170 175 180 185	700
gtg ttc gcg ctg ccc cac ttc acg gct ggc cgc tat gag gtg gag ttg Val Phe Ala Leu Pro His Phe Thr Ala Gly Arg Tyr Glu Val Glu Leu 190 195 200	748
gac gcg ggt gtc agg acg tgc cct gcc aac ccc ggc gcg gtg tgt gcg Asp Ala Gly Val Arg Thr Cys Pro Ala Asn Pro Gly Ala Val Cys Ala 205 210 215	796
gac agc acc tcg ggc ctg tcc cgc tac cag ctg gtc ttc atg ctg ggc Asp Ser Thr Ser Gly Leu Ser Arg Tyr Gln Leu Val Phe Met Leu Gly 220 225 230	844
cag ttc ctg cat ggc gtg ggt gcc aca ccc ctc tac acg ctg ggc gtc Gln Phe Leu His Gly Val Gly Ala Thr Pro Leu Tyr Thr Leu Gly Val 235 240 245	892
acc tac ctg gat gag aac gtc aag tcc agc tgc tcg ccc gtc tac att Thr Tyr Leu Asp Glu Asn Val Lys Ser Ser Cys Ser Pro Val Tyr Ile 250 255 260 265	940
gcc atc ttc tac aca gcg gcc atc ctg ggc cca gct gcc ggc tac ctg Ala Ile Phe Tyr Thr Ala Ala Ile Leu Gly Pro Ala Ala Gly Tyr Leu 270 275 280	988
att gga ggt gcc ctg ctg aat atc tac acg gaa atg ggc cga cgg acg Ile Gly Gly Ala Leu Leu Asn Ile Tyr Thr Glu Met Gly Arg Arg Thr 285 290 295	1036
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ggt tac cct cgg cag ctg cca ggc tcc cag cgc tac gcg gtc atg aga Gly Tyr Pro Arg Gln Leu Pro Gly Ser Gln Arg Tyr Ala Val Met Arg 330 335 340 345	1180
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aac ccg gac ttt ggg aaa acc atc aga gac ctg cct ctc tcc atc tgg Asn Pro Asp Phe Gly Lys Thr Ile Arg Asp Leu Pro Leu Ser Ile Trp 365 370 375	1276
ctc ctg ctg aag aac ccc acg ttc atc ctg ctc tgc ctg gcc ggg gcc Leu Leu Leu Lys Asn Pro Thr Phe Ile Leu Leu Cys Leu Ala Gly Ala 380 385 390	1324
acc gag gcc act ctc atc acc ggc atg tcc acg ttc agc ccc aag ttc Thr Glu Ala Thr Leu Ile Thr Gly Met Ser Thr Phe Ser Pro Lys Phe 395 400 405	1372
ttg gag tcc cag ttc agc ctg agt gcc tca gaa gct gcc acc ttg ttt Leu Glu Ser Gln Phe Ser Leu Ser Ala Ser Glu Ala Ala Thr Leu Phe 410 415 420 425	1420
ggg tac ctg gtg gtg cca gcg ggt ggt ggc ggc acc ttc ctg ggc ggc Gly Tyr Leu Val Val Pro Ala Gly Gly Gly Thr Phe Leu Gly Gly 430 435 440	1468
ttc ttt gtg aac aag ctc agg ctc cgg ggc tcc gcg gtc atc aag ttc Phe Phe Val Asn Lys Leu Arg Leu Arg Gly Ser Ala Val Ile Lys Phe 445 450 455	1516
tgc ctg ttc tgc acc gtt gtc agc ctg ctg ggc atc ctc gtc ttc tca Cys Leu Phe Cys Thr Val Val Ser Leu Leu Gly Ile Leu Val Phe Ser 460 465 470	1564
ctg cac tgc ccc agt gtg ccc atg gcg ggc gtc aca gcc agc tac ggc Leu His Cys Pro Ser Val Pro Met Ala Gly Val Thr Ala Ser Tyr Gly 475 480 485	1612
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gct gcc tgc agc tgc cag cca gaa cac tac agc cct gtg tgc ggc tcg Ala Ala Cys Ser Cys Gln Pro Glu His Tyr Ser Pro Val Cys Gly Ser 510 515 520	1708
gac ggc ctc atg tac ttc tca ctg tgc cac gca ggg tgc cct gca gcc Asp Gly Leu Met Tyr Phe Ser Leu Cys His Ala Gly Cys Pro Ala Ala 525 530 535	1756
acg gag acg aat gtg gac ggc cag aag gtg tac cga gac tgt agc tgt Thr Glu Thr Asn Val Asp Gly Gln Lys Val Tyr Arg Asp Cys Ser Cys 540 545 550	1804
atc cct cag aat ctt tcc tct ggt ttt ggc cat gcc act gca ggg aaa Ile Pro Gln Asn Leu Ser Ser Gly Phe Gly His Ala Thr Ala Gly Lys 555 560 565	1852
tgc act tca act tgt cag aga aag ccc ctc ctt ctg gtt ttc ata ttc Cys Thr Ser Thr Cys Gln Arg Lys Pro Leu Leu Leu Val Phe Ile Phe 570 575 580 585	1900
gtt gta att ttc ttt aca ttc ctc agc agc att cct gca cta acg gca	1948

Val Val Ile Phe Phe Thr Phe Leu Ser Ser Ile Pro Ala Leu Thr Ala	
590 595 600	
act cta cga tgt gtc cgt gac cct cag aga tcc ttt gcc ctg gga atc	1996
Thr Leu Arg Cys Val Arg Asp Pro Gln Arg Ser Phe Ala Leu Gly Ile	
605 610 615	
cag tgg att gta gtt aga ata cta ggg ggc atc ccg ggg ccc atc gcc	2044
Gln Trp Ile Val Val Arg Ile Leu Gly Gly Ile Pro Gly Pro Ile Ala	
620 625 630	
ttc ggc tgg gtg atc gac aag gcc tgt ctg ctg tgg cag gac cag tgt	2092
Phe Gly Trp Val Ile Asp Lys Ala Cys Leu Leu Trp Gln Asp Gln Cys	
635 640 645	
ggc cag cag ggc tcc tgc ttg gtg tac cag aat tcg gcc atg agc cgc	2140
Gly Gln Gln Gly Ser Cys Leu Val Tyr Gln Asn Ser Ala Met Ser Arg	
650 655 660 665	
tac ata ctc atc atg ggg ctc ctg tac aag gtg ctg ggc gtc ctc ttc	2188
Tyr Ile Leu Ile Met Gly Leu Leu Tyr Lys Val Leu Gly Val Leu Phe	
670 675 680	
ttt gcc ata gcc tgc ttc tta tac aag ccc ctg tcg gag tct tca gat	2236
Phe Ala Ile Ala Cys Phe Leu Tyr Lys Pro Leu Ser Glu Ser Ser Asp	
685 690 695	
ggc ctg gaa act tgt ctg ccc agc cag tcc tca gcc cct gac agt gcc	2284
Gly Leu Glu Thr Cys Leu Pro Ser Gln Ser Ser Ala Pro Asp Ser Ala	
700 705 710	
aca gat agc cag ctc cag agc agc gtc tgaccaccgc ccgcgcccac	2331
Thr Asp Ser Gln Leu Gln Ser Ser Val	
715 720	
ccggccacgg cgggcactca gcatttctctg atgacagaac agtgccgttg ggtgatgcaa	2391
tcacacggga acttctatctt gacctgcaac cttctactta acctgtgggt taaagtcggc	2451
tgtgacctcc tgtccccaga gctgtacggc cctgcagtgg gtgggaggaa cttgcataaa	2511
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gatcgtgtgt ggtgtgcgtg aggacaaact ccgcaggggc tgtgaatccc actgggaggg	2631
cggcgggcct gcagcccag gaaggcttgt gtgtcctcag ttaaaactgt gcatatcgaa	2691
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aaaaaaaaaa aa	2763

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 <212> PRT
 <213> Homo sapiens

<400> 12

Met Pro Leu His Gln Leu Gly Asp Lys Pro Leu Thr Phe Pro Ser Pro
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Asn Ser Ala Met Glu Asn Gly Leu Asp His Thr Pro Pro Ser Arg Arg
20 25 30

Ala Ser Pro Gly Thr Pro Leu Ser Pro Gly Ser Leu Arg Ser Ala Ala
35 40 45

His Ser Pro Leu Asp Thr Ser Lys Gln Pro Leu Cys Gln Leu Trp Ala
50 55 60

Glu Lys His Gly Ala Arg Gly Thr His Glu Val Arg Tyr Val Ser Ala
65 70 75 80

Gly Gln Ser Val Ala Cys Gly Trp Trp Ala Phe Ala Pro Pro Cys Leu
85 90 95

Gln Val Leu Asn Thr Pro Lys Gly Ile Leu Phe Phe Leu Cys Ala Ala
100 105 110

Ala Phe Leu Gln Gly Met Thr Val Asn Gly Phe Ile Asn Thr Val Ile
115 120 125

Thr Ser Leu Glu Arg Arg Tyr Asp Leu His Ser Tyr Gln Ser Gly Leu
130 135 140

Ile Ala Ser Ser Tyr Asp Ile Ala Ala Cys Leu Cys Leu Thr Phe Val
145 150 155 160

Ser Tyr Phe Gly Gly Ser Gly His Lys Pro Arg Trp Leu Gly Trp Gly
165 170 175

Val Leu Leu Met Gly Thr Gly Ser Leu Val Phe Ala Leu Pro His Phe
180 185 190

Thr Ala Gly Arg Tyr Glu Val Glu Leu Asp Ala Gly Val Arg Thr Cys
195 200 205

Pro Ala Asn Pro Gly Ala Val Cys Ala Asp Ser Thr Ser Gly Leu Ser
210 215 220

Arg Tyr Gln Leu Val Phe Met Leu Gly Gln Phe Leu His Gly Val Gly
 225 230 235 240

Ala Thr Pro Leu Tyr Thr Leu Gly Val Thr Tyr Leu Asp Glu Asn Val
 245 250 255

Lys Ser Ser Cys Ser Pro Val Tyr Ile Ala Ile Phe Tyr Thr Ala Ala
 260 265 270

Ile Leu Gly Pro Ala Ala Gly Tyr Leu Ile Gly Gly Ala Leu Leu Asn
 275 280 285

Ile Tyr Thr Glu Met Gly Arg Arg Thr Glu Leu Thr Thr Glu Ser Pro
 290 295 300

Leu Trp Val Gly Ala Trp Trp Val Gly Phe Leu Gly Ser Gly Ala Ala
 305 310 315 320

Ala Phe Phe Thr Ala Val Pro Ile Leu Gly Tyr Pro Arg Gln Leu Pro
 325 330 335

Gly Ser Gln Arg Tyr Ala Val Met Arg Ala Ala Glu Met His Gln Leu
 340 345 350

Lys Asp Ser Ser Arg Gly Glu Ala Ser Asn Pro Asp Phe Gly Lys Thr
 355 360 365

Ile Arg Asp Leu Pro Leu Ser Ile Trp Leu Leu Leu Lys Asn Pro Thr
 370 375 380

Phe Ile Leu Leu Cys Leu Ala Gly Ala Thr Glu Ala Thr Leu Ile Thr
 385 390 395 400

Gly Met Ser Thr Phe Ser Pro Lys Phe Leu Glu Ser Gln Phe Ser Leu
 405 410 415

Ser Ala Ser Glu Ala Ala Thr Leu Phe Gly Tyr Leu Val Val Pro Ala
 420 425 430

Gly Gly Gly Gly Thr Phe Leu Gly Gly Phe Phe Val Asn Lys Leu Arg
 435 440 445

Leu Arg Gly Ser Ala Val Ile Lys Phe Cys Leu Phe Cys Thr Val Val
 450 455 460

Ser Leu Leu Gly Ile Leu Val Phe Ser Leu His Cys Pro Ser Val Pro
 465 470 475 480

Met Ala Gly Val Thr Ala Ser Tyr Gly Gly Ser Leu Leu Pro Glu Gly
 485 490 495

His Leu Asn Leu Thr Ala Pro Cys Asn Ala Ala Cys Ser Cys Gln Pro
 500 505 510

Glu His Tyr Ser Pro Val Cys Gly Ser Asp Gly Leu Met Tyr Phe Ser
 515 520 525

Leu Cys His Ala Gly Cys Pro Ala Ala Thr Glu Thr Asn Val Asp Gly
 530 535 540

Gln Lys Val Tyr Arg Asp Cys Ser Cys Ile Pro Gln Asn Leu Ser Ser
 545 550 555 560

Gly Phe Gly His Ala Thr Ala Gly Lys Cys Thr Ser Thr Cys Gln Arg
 565 570 575

Lys Pro Leu Leu Leu Val Phe Ile Phe Val Val Ile Phe Phe Thr Phe
 580 585 590

Leu Ser Ser Ile Pro Ala Leu Thr Ala Thr Leu Arg Cys Val Arg Asp
 595 600 605

Pro Gln Arg Ser Phe Ala Leu Gly Ile Gln Trp Ile Val Val Arg Ile
 610 615 620

Leu Gly Gly Ile Pro Gly Pro Ile Ala Phe Gly Trp Val Ile Asp Lys
 625 630 635 640

Ala Cys Leu Leu Trp Gln Asp Gln Cys Gly Gln Gln Gly Ser Cys Leu
 645 650 655

Val Tyr Gln Asn Ser Ala Met Ser Arg Tyr Ile Leu Ile Met Gly Leu
 660 665 670

Leu Tyr Lys Val Leu Gly Val Leu Phe Phe Ala Ile Ala Cys Phe Leu

675 680 685
 Tyr Lys Pro Leu Ser Glu Ser Ser Asp Gly Leu Glu Thr Cys Leu Pro
 690 695 700
 Ser Gln Ser Ser Ala Pro Asp Ser Ala Thr Asp Ser Gln Leu Gln Ser
 705 710 715 720

Ser Val

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 <212> DNA
 <213> Homo sapiens

<400> 13
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<210> 14
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<400> 14
 ctgtcggagt cttcagatg 19

<210> 15
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<400> 15
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<210> 16
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 <213> Homo sapiens

<400> 16
 tgcctctact ctgaccctag 20

<210> 17
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ggagcagtca ttgacaccac 20

<210> 18
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<400> 18
tgctgggagt acaacgtgac g 21

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<213> Homo sapiens

<400> 19
acaaggagga tggactgcag 20

<210> 20
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<400> 20
caggaatccc agctccagtg 20

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<400> 21
gctacaaccc aactactggc 20

<210> 22
<211> 20
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<213> Homo sapiens

<400> 22
gggactaact gtgatactgg 20

<210> 23
<211> 661
<212> PRT
<213> Rattus rattus

<400> 23

Met Gly Lys Ser Glu Lys Arg Val Ala Thr His Gly Val Arg Cys Phe
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Ala Lys Ile Lys Met Phe Leu Leu Ala Leu Thr Cys Ala Tyr Val Ser
 20 25 30

Lys Ser Leu Ser Gly Thr Tyr Met Asn Ser Met Leu Thr Gln Ile Glu
 35 40 45

Arg Gln Phe Gly Ile Pro Thr Ser Ile Val Gly Leu Ile Asn Gly Ser
 50 55 60

Phe Glu Ile Gly Asn Leu Leu Leu Ile Ile Phe Val Ser Tyr Phe Gly
 65 70 75 80

Thr Lys Leu His Arg Pro Ile Met Ile Gly Val Gly Cys Ala Val Met
 85 90 95

Gly Leu Gly Cys Phe Leu Ile Ser Leu Pro His Phe Leu Met Gly Gln
 100 105 110

Tyr Glu Tyr Glu Thr Ile Leu Pro Thr Ser Asn Val Ser Ser Asn Ser
 115 120 125

Phe Phe Cys Val Glu Asn Arg Ser Gln Thr Leu Asn Pro Thr Gln Asp
 130 135 140

Pro Ser Glu Cys Val Lys Glu Met Lys Ser Leu Met Trp Ile Tyr Val
 145 150 155 160

Leu Val Gly Asn Ile Ile Arg Gly Ile Gly Glu Thr Pro Ile Met Pro
 165 170 175

Leu Gly Ile Ser Tyr Ile Glu Asp Phe Ala Lys Ser Glu Asn Ser Pro
 180 185 190

Leu Tyr Ile Gly Ile Leu Glu Thr Gly Met Thr Ile Gly Pro Leu Ile
 195 200 205

Gly Leu Leu Leu Ala Ser Ser Cys Ala Asn Ile Tyr Val Asp Ile Glu
 210 215 220

Ser Val Asn Thr Asp Asp Leu Thr Ile Thr Pro Thr Asp Thr Arg Trp
 225 230 235 240

Val Gly Ala Trp Trp Ile Gly Phe Leu Val Cys Ala Gly Val Asn Ile
 245 250 255

Leu Thr Ser Phe Pro Phe Phe Phe Phe Pro Lys Thr Leu Pro Lys Glu
 260 265 270

Gly Leu Gln Glu Asn Val Asp Gly Thr Glu Asn Ala Lys Glu Lys Lys
 275 280 285

His Arg Lys Lys Ala Lys Glu Glu Lys Arg Gly Ile Thr Lys Asp Phe
 290 295 300

Phe Val Phe Met Lys Ser Leu Ser Cys Asn Pro Ile Tyr Met Leu Phe
 305 310 315 320

Ile Leu Ile Ser Val Leu Gln Phe Asn Ala Phe Ile Asn Ser Phe Thr
 325 330 335

Phe Met Pro Lys Tyr Leu Glu Gln Gln Tyr Gly Lys Ser Thr Ala Glu
 340 345 350

Val Val Phe Leu Met Gly Leu Tyr Met Leu Pro Pro Ile Cys Leu Gly
 355 360 365

Tyr Leu Ile Gly Gly Leu Ile Met Lys Lys Phe Lys Val Thr Val Lys
 370 375 380

Lys Ala Ala His Leu Ala Phe Trp Leu Cys Leu Ser Glu Tyr Leu Leu
 385 390 395 400

Ser Phe Leu Ser Tyr Val Met Thr Cys Asp Asn Phe Pro Val Ala Gly
 405 410 415

Leu Thr Thr Ser Tyr Glu Gly Val Gln His Gln Leu Tyr Val Glu Asn
 420 425 430

Lys Val Leu Ala Asp Cys Asn Thr Arg Cys Asn Cys Ser Thr Asn Thr
 435 440 445

Trp Asp Pro Val Cys Gly Asp Asn Gly Leu Ala Tyr Met Ser Ala Cys
 450 455 460

Leu Ala Gly Cys Glu Lys Ser Val Gly Thr Gly Thr Asn Met Val Phe
 465 470 475 480

Gln Asn Cys Ser Cys Ile Gln Ser Ser Gly Asn Ser Ser Ala Val Leu
 485 490 495

Gly Leu Cys Asn Lys Gly Pro Asp Cys Ala Asn Lys Leu Gln Tyr Phe
 500 505 510

Leu Ile Ile Ala Ile Phe Gly Cys Phe Ile Tyr Ser Leu Ala Gly Ile
 515 520 525

Pro Gly Tyr Met Val Leu Leu Arg Cys Ile Lys Ser Glu Glu Lys Ser
 530 535 540

Leu Gly Val Gly Leu His Ala Phe Cys Ile Arg Ile Leu Ala Gly Ile
 545 550 555 560

Pro Ala Pro Ile Tyr Phe Gly Ala Leu Ile Asp Arg Thr Cys Leu His
 565 570 575

Trp Gly Thr Leu Lys Cys Gly Glu Pro Gly Ala Cys Arg Met Tyr Asp
 580 585 590

Ile Asn Ser Phe Arg Arg Leu Tyr Leu Gly Leu Pro Ala Ala Leu Arg
 595 600 605

Gly Ala Ser Phe Val Pro Ala Phe Phe Ile Leu Arg Leu Thr Arg Thr
 610 615 620

Phe Gln Phe Pro Gly Asp Ile Glu Ser Ser Lys Thr Asp His Ala Glu
 625 630 635 640

Met Lys Leu Thr Leu Lys Glu Ser Glu Cys Thr Glu Val Leu Arg Ser
 645 650 655

Lys Val Thr Glu Asp
 660

<210> 24
 <211> 670
 <212> PRT
 <213> Rattus rattus

<400> 24

Met Gly Glu Thr Glu Lys Arg Val Ala Thr His Glu Val Arg Cys Phe
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Ser Lys Ile Lys Met Phe Leu Leu Ala Leu Thr Trp Ala Tyr Val Ser
20 25 30

Gln Ser Leu Ser Gly Ile Tyr Met Asn Thr Met Leu Thr Gln Ile Glu
35 40 45

Arg Gln Phe Asp Ile Pro Ile Ser Ile Val Gly Phe Ile Asn Gly Ser
50 55 60

Phe Glu Ile Gly Asn Phe Leu Leu Ile Ile Phe Val Ser Tyr Phe Gly
65 70 75 80

Thr Lys Leu His Arg Pro Ile Met Ile Gly Val Gly Cys Val Ile Met
85 90 95

Gly Leu Gly Cys Phe Leu Met Ser Leu Pro His Phe Leu Met Gly Arg
100 105 110

Tyr Glu Tyr Glu Thr Thr Ile Ser Pro Thr Ser Asn Leu Ser Ser Asn
115 120 125

Ser Phe Leu Cys Met Glu Asn Arg Ser Gln Thr Leu Lys Pro Thr Gln
130 135 140

Asp Pro Ala Glu Cys Ile Lys Glu Met Lys Ser Leu Met Trp Ile Tyr
145 150 155 160

Val Leu Val Gly Asn Ile Ile Arg Gly Ile Gly Glu Thr Pro Ile Met
165 170 175

Pro Leu Gly Ile Ser Tyr Ile Glu Asp Phe Ala Lys Ser Glu Asn Ser
180 185 190

Pro Leu Tyr Ile Gly Ile Leu Glu Thr Gly Lys Val Phe Gly Pro Ile
195 200 205

Val Gly Leu Leu Leu Gly Ser Phe Cys Ala Ser Ile Tyr Val Asp Thr
210 215 220

Gly Ser Val Asn Thr Asp Asp Leu Thr Ile Thr Pro Thr Asp Thr Arg
 225 230 235 240

Trp Val Gly Ala Trp Trp Ile Gly Phe Leu Ile Cys Ala Gly Val Asn
 245 250 255

Ile Leu Ser Ser Ile Pro Phe Phe Phe Phe Pro Lys Thr Leu Pro Lys
 260 265 270

Glu Gly Leu Gln Asp Asp Val Asp Gly Thr Asn Asn Asp Lys Glu Glu
 275 280 285

Lys His Arg Glu Lys Ala Lys Glu Glu Asn Arg Gly Ile Thr Lys Asp
 290 295 300

Phe Leu Pro Phe Met Lys Ser Leu Ser Cys Asn Pro Ile Tyr Met Leu
 305 310 315 320

Leu Ile Leu Thr Ser Val Leu Gln Ile Asn Ala Phe Ile Asn Met Phe
 325 330 335

Thr Phe Leu Pro Lys Tyr Leu Glu Gln Gln Tyr Gly Lys Ser Thr Ala
 340 345 350

Glu Val Val Leu Leu Ile Gly Val Tyr Asn Leu Pro Pro Ile Cys Ile
 355 360 365

Gly Tyr Leu Leu Ile Gly Phe Ile Met Lys Lys Phe Lys Ile Thr Val
 370 375 380

Lys Lys Ala Ala Tyr Met Ala Phe Cys Leu Ser Leu Phe Glu Tyr Leu
 385 390 395 400

Leu Tyr Phe Leu His Phe Met Ile Thr Cys Asp Asn Phe Pro Val Ala
 405 410 415

Gly Leu Thr Ala Leu Tyr Glu Gly Val His His Pro Leu Tyr Val Glu
 420 425 430

Asn Lys Val Leu Ala Asp Cys Asn Arg Gly Cys Ser Cys Ser Thr Asn
 435 440 445

Ser Trp Asp Pro Val Cys Gly Asp Asn Gly Leu Ala Tyr Met Ser Ala
 450 455 460

Cys Leu Ala Gly Cys Lys Lys Ser Val Gly Thr Gly Thr Asn Met Val
 465 470 475 480

Phe Gln Asn Cys Ser Cys Ile Arg Ser Ser Gly Asn Ser Ser Ala Val
 485 490 495

Leu Gly Leu Cys Lys Lys Gly Pro Glu Cys Ala Asn Lys Leu Gln Tyr
 500 505 510

Phe Leu Ile Met Ser Val Ile Gly Ser Phe Ile Tyr Ser Ile Thr Ala
 515 520 525

Ile Pro Gly Tyr Met Val Leu Leu Arg Cys Ile Lys Pro Glu Lys Lys
 530 535 540

Ser Leu Gly Ile Gly Leu His Ala Phe Cys Thr Arg Val Phe Ala Gly
 545 550 555 560

Ile Pro Ala Pro Ile Tyr Phe Gly Ala Leu Ile Asp Arg Thr Cys Leu
 565 570 575

His Trp Gly Thr Leu Lys Cys Gly Glu Pro Gly Ala Cys Arg Met Tyr
 580 585 590

Asn Ile Asn Asn Phe Arg Arg Ile Tyr Leu Val Leu Pro Ala Ala Leu
 595 600 605

Arg Gly Ser Ser Tyr Leu Pro Ala Leu Phe Ile Leu Ile Leu Met Arg
 610 615 620

Lys Phe Gln Phe Pro Gly Glu Ile Asp Ser Ser Glu Thr Glu Leu Ala
 625 630 635 640

Glu Met Lys Ile Thr Val Lys Lys Ser Glu Cys Thr Asp Val His Gly
 645 650 655

Ser Pro Gln Val Glu Asn Asp Gly Glu Leu Lys Thr Arg Leu
 660 665 670

<210> 25

<211> 669
 <212> PRT
 <213> Rattus rattus

<400> 25

Met Gly Asp Leu Glu Lys Gly Ala Ala Thr His Gly Ala Gly Cys Phe
 1 5 10 15

Ala Lys Ile Lys Val Phe Leu Met Ala Leu Thr Cys Ala Tyr Val Ser
 20 25 30

Lys Ser Leu Ser Gly Thr Phe Met Ser Ser Met Leu Thr Gln Ile Glu
 35 40 45

Arg Gln Phe Gly Ile Pro Thr Ala Ile Val Gly Phe Ile Asn Gly Ser
 50 55 60

Phe Glu Ile Gly Asn Leu Leu Ile Ile Phe Val Ser Tyr Phe Gly
 65 70 75 80

Met Lys Leu His Arg Pro Ile Val Ile Gly Val Gly Cys Ala Val Met
 85 90 95

Gly Leu Gly Cys Phe Ile Ile Ser Leu Pro His Phe Leu Met Gly Arg
 100 105 110

Tyr Glu Tyr Glu Thr Thr Ile Leu Pro Thr Ser Asn Leu Ser Ser Asn
 115 120 125

Ser Phe Leu Cys Met Glu Asn Gln Thr Gln Thr Leu Asn Pro Ala Gln
 130 135 140

Asp Pro Ala Glu Cys Val Lys Glu Val Lys Ser Leu Met Trp Ile Tyr
 145 150 155 160

Val Leu Val Gly Asn Ile Ile Arg Gly Ile Gly Glu Thr Pro Ile Met
 165 170 175

Pro Leu Gly Val Ser Tyr Ile Glu Asn Phe Ala Lys Ser Glu Asn Ser
 180 185 190

Pro Leu Tyr Ile Gly Ile Leu Glu Thr Gly Lys Met Ile Gly Pro Ile
 195 200 205

Phe Gly Leu Leu Leu Gly Ser Phe Cys Ala Ser Ile Tyr Val Asp Thr
210 215 220
Gly Ser Val Asn Thr Asp Asp Leu Thr Ile Thr Pro Thr Asp Ile Arg
225 230 235 240
Trp Val Gly Ala Trp Trp Ile Gly Phe Leu Val Cys Ala Gly Val Asn
245 250 255
Ile Leu Ile Ser Ile Pro Phe Phe Phe Phe Pro Lys Thr Leu Pro Lys
260 265 270
Glu Gly Leu Gln Glu Asn Val Asp Gly Thr Glu Asn Ala Lys Glu Glu
275 280 285
Ser Thr Glu Lys Arg Pro Arg Lys Lys Asn Arg Gly Ile Thr Lys Asp
290 295 300
Phe Phe Pro Phe Leu Lys Ser Pro Val Leu Gln Pro Asp Leu His Ala
305 310 315 320
Val His Pro Tyr Lys Val Leu Gln Val Asn Ala Phe Asn Ile Tyr Phe
325 330 335
Ser Phe Leu Pro Lys Tyr Leu Glu Asn Gln Tyr Gly Lys Ser Thr Ala
340 345 350
Glu Val Ile Phe Leu Met Gly Val Tyr Asn Leu Pro Ala Ile Cys Ile
355 360 365
Gly Tyr Leu Ile Ala Gly Phe Met Met Lys Lys Phe Lys Ile Thr Val
370 375 380
Lys Thr Ala Ala Phe Leu Arg Phe Cys Leu Ser Leu Ser Glu Tyr Ser
385 390 395 400
Phe Gly Phe Cys Asn Phe Leu Ile Thr Cys Asp Asn Val Pro Val Ala
405 410 415
Gly Leu Thr Asn Ser Tyr Glu Arg Asp Gln Lys Pro Leu Tyr Leu Glu
420 425 430

Asn Asn Val Leu Ala Asp Cys Asn Thr Arg Cys Ser Cys Leu Thr Lys
 435 440 445

Thr Trp Asp Pro Val Cys Gly Asp Asn Gly Leu Ala Tyr Met Ser Ala
 450 455 460

Cys Leu Ala Gly Cys Glu Lys Ser Val Gly Thr Gly Thr Asn Met Val
 465 470 475 480

Phe His Asn Cys Ser Cys Ile Gln Ser Pro Gly Asn Ser Ser Ala Val
 485 490 495

Leu Gly Leu Cys Asn Lys Gly Pro Glu Cys Thr Asn Lys Leu Gln Tyr
 500 505 510

Leu Leu Ile Leu Ser Gly Phe Leu Ser Ile Leu Tyr Ser Phe Ala Ala
 515 520 525

Ile Pro Gly Tyr Met Val Phe Leu Arg Cys Ile Lys Ser Glu Glu Lys
 530 535 540

Ser Leu Gly Ile Gly Ile His Ala Phe Cys Ile Arg Val Phe Ala Gly
 545 550 555 560

Ile Pro Ala Pro Ile Tyr Phe Gly Ala Leu Ile Asp Arg Thr Cys Leu
 565 570 575

His Trp Gly Thr Gln Lys Cys Gly Ala Pro Gly Arg Arg Met Tyr Asp
 580 585 590

Ile Asn Ser Phe Arg Arg Ile Tyr Leu Gly Met Ser Ala Ala Leu Arg
 595 600 605

Gly Ser Ser Tyr Leu Pro Ala Phe Val Ile Val Ile Leu Thr Arg Lys
 610 615 620

Phe Ser Leu Pro Gly Lys Ile Asn Ser Ser Glu Met Glu Ile Ala Glu
 625 630 635 640

Met Lys Leu Thr Glu Lys Glu Ser Gln Cys Thr Asp Val His Arg Asn
 645 650 655

Pro Lys Phe Lys Asn Asp Gly Glu Leu Lys Thr Lys Leu

660

665

<210> 26
 <211> 670
 <212> PRT
 <213> Rattus rattus

<400> 26

Met Glu Glu Thr Glu Lys Lys Ile Ala Thr Gln Glu Gly Arg Leu Phe
 1 5 10 15

Ser Lys Met Lys Val Phe Leu Leu Ser Leu Thr Cys Ala Cys Leu Thr
 20 25 30

Lys Ser Leu Ser Gly Val Tyr Met Asn Ser Met Leu Thr Gln Ile Glu
 35 40 45

Arg Gln Phe Asp Ile Ser Thr Ser Val Ala Gly Leu Ile Asn Gly Ser
 50 55 60

Phe Glu Ile Gly Asn Leu Phe Phe Ile Val Phe Val Ser Tyr Phe Gly
 65 70 75 80

Thr Lys Leu His Arg Pro Val Val Ile Gly Ile Gly Cys Val Ile Met
 85 90 95

Gly Leu Gly Cys Leu Leu Met Ser Leu Pro His Phe Phe Met Gly Arg
 100 105 110

Tyr Glu Tyr Glu Thr Thr Ile Ser Pro Thr Gly Asn Leu Ser Ser Asn
 115 120 125

Ser Phe Leu Cys Met Glu Asn Arg Thr Gln Thr Leu Lys Pro Thr Gln
 130 135 140

Asp Pro Ala Glu Cys Val Lys Glu Met Lys Ser Leu Met Trp Ile Cys
 145 150 155 160

Val Met Val Gly Asn Ile Ile Arg Gly Ile Gly Glu Thr Pro Ile Val
 165 170 175

Pro Leu Gly Ile Ser Tyr Ile Glu Asp Phe Ala Lys Ser Glu Asn Ser
 180 185 190

Pro Leu Tyr Ile Gly Ile Leu Glu Met Gly Lys Val Ala Gly Pro Ile
 195 200 205

Phe Gly Leu Leu Leu Gly Ser Tyr Cys Ala Gln Ile Tyr Val Asp Ile
 210 215 220

Gly Ser Val Asn Thr Asp Asp Leu Thr Ile Thr Pro Ser Asp Thr Arg
 225 230 235 240

Trp Val Gly Ala Trp Trp Ile Gly Phe Leu Val Cys Ala Gly Val Asn
 245 250 255

Ile Leu Thr Ser Ile Pro Phe Phe Phe Leu Pro Lys Ala Leu Pro Lys
 260 265 270

Lys Gly Gln Gln Glu Asn Val Ala Val Thr Lys Asp Gly Lys Val Glu
 275 280 285

Lys Tyr Gly Gly Gln Ala Arg Glu Glu Asn Leu Gly Ile Thr Lys Asp
 290 295 300

Phe Leu Thr Phe Met Lys Arg Leu Phe Cys Asn Pro Ile Tyr Met Leu
 305 310 315 320

Phe Ile Leu Thr Ser Val Leu Gln Val Asn Gly Phe Ile Asn Lys Phe
 325 330 335

Thr Phe Leu Pro Lys Tyr Leu Glu Gln Gln Tyr Gly Lys Ser Thr Ala
 340 345 350

Glu Ala Ile Phe Leu Ile Gly Val Tyr Ser Leu Pro Pro Ile Cys Leu
 355 360 365

Gly Tyr Leu Ile Gly Gly Phe Ile Met Lys Lys Phe Lys Ile Thr Val
 370 375 380

Lys Lys Ala Ala Tyr Leu Ala Phe Cys Leu Ser Val Phe Glu Tyr Leu
 385 390 395 400

Leu Phe Leu Cys His Phe Met Leu Thr Cys Asp Asn Ala Ala Val Ala
 405 410 415

Gly Leu Thr Thr Ser Tyr Lys Gly Val Gln His Gln Leu His Val Glu
 420 425 430

Ser Lys Val Leu Ala Asp Cys Asn Thr Arg Cys Ser Cys Ser Thr Asn
 435 440 445

Thr Trp Asp Pro Val Cys Gly Asp Asn Gly Val Ala Tyr Met Ser Ala
 450 455 460

Cys Leu Ala Gly Cys Lys Lys Phe Val Gly Thr Gly Thr Asn Met Val
 465 470 475 480

Phe Gln Asp Cys Ser Cys Ile Gln Ser Leu Gly Asn Ser Ser Ala Val
 485 490 495

Leu Gly Leu Cys Lys Lys Gly Pro Glu Cys Ala Asn Arg Leu Gln Tyr
 500 505 510

Phe Leu Ile Leu Thr Ile Ile Ile Ser Phe Ile Tyr Ser Leu Thr Ala
 515 520 525

Ile Pro Gly Tyr Met Val Phe Leu Arg Cys Val Lys Ser Glu Glu Lys
 530 535 540

Ser Leu Gly Val Gly Leu His Thr Phe Cys Ile Arg Val Phe Ala Gly
 545 550 555 560

Ile Pro Ala Pro Val Tyr Phe Gly Ala Leu Ile Asp Arg Thr Cys Leu
 565 570 575

His Trp Gly Thr Leu Lys Cys Gly Gln Arg Gly Ala Cys Arg Met Tyr
 580 585 590

Asp Ile Asn Ser Phe Arg His Ile Tyr Leu Gly Leu Pro Ile Ala Leu
 595 600 605

Arg Gly Ser Ser Tyr Leu Pro Ala Phe Phe Ile Leu Ile Leu Met Arg
 610 615 620

Lys Phe Gln Phe Pro Gly Asp Ile Asp Ser Ser Ala Thr Asp His Thr
 625 630 635 640

Glu Met Met Leu Gly Glu Lys Glu Ser Glu His Thr Asp Val His Gly

645

650

655

Ser Pro Gln Val Glu Asn Asp Gly Glu Leu Lys Thr Lys Leu
 660 665 670

<210> 27
 <211> 670
 <212> PRT
 <213> Homo sapiens

<400> 27

Met Gly Glu Thr Glu Lys Arg Ile Glu Thr His Arg Ile Arg Cys Leu
 1 5 10 15

Ser Lys Leu Lys Met Phe Leu Leu Ala Ile Thr Cys Ala Phe Val Ser
 20 25 30

Lys Thr Leu Ser Gly Ser Tyr Met Asn Ser Met Leu Thr Gln Ile Glu
 35 40 45

Arg Gln Phe Asn Ile Pro Thr Ser Leu Val Gly Phe Ile Asn Gly Ser
 50 55 60

Phe Glu Ile Gly Asn Leu Leu Ile Ile Phe Val Ser Tyr Phe Gly
 65 70 75 80

Thr Lys Leu His Arg Pro Ile Met Ile Gly Ile Gly Cys Val Val Met
 85 90 95

Gly Leu Gly Cys Phe Leu Lys Ser Leu Pro His Phe Leu Met Asn Gln
 100 105 110

Tyr Glu Tyr Glu Ser Thr Val Ser Val Ser Gly Asn Leu Ser Ser Asn
 115 120 125

Ser Phe Leu Cys Met Glu Asn Gly Thr Gln Ile Leu Arg Pro Thr Gln
 130 135 140

Asp Pro Ser Glu Cys Thr Lys Glu Val Lys Ser Leu Met Trp Val Tyr
 145 150 155 160

Val Leu Val Gly Asn Ile Val Arg Gly Met Gly Glu Thr Pro Ile Leu
 165 170 175

Pro Leu Gly Ile Ser Tyr Ile Glu Asp Phe Ala Lys Phe Glu Asn Ser
 180 185 190

Pro Leu Tyr Ile Gly Leu Val Glu Thr Gly Ala Ile Ile Gly Pro Leu
 195 200 205

Ile Gly Leu Leu Leu Ala Ser Phe Cys Ala Asn Val Tyr Val Asp Thr
 210 215 220

Gly Phe Val Asn Thr Asp Asp Leu Ile Ile Thr Pro Thr Asp Thr Arg
 225 230 235 240

Trp Val Gly Ala Trp Trp Phe Gly Phe Leu Ile Cys Ala Gly Val Asn
 245 250 255

Val Leu Thr Ala Ile Pro Phe Phe Phe Leu Pro Asn Thr Leu Pro Lys
 260 265 270

Glu Gly Leu Glu Thr Asn Ala Asp Ile Ile Lys Asn Glu Asn Glu Asp
 275 280 285

Lys Gln Lys Glu Glu Val Lys Lys Glu Lys Tyr Gly Ile Thr Lys Asp
 290 295 300

Phe Leu Pro Phe Met Lys Ser Leu Ser Cys Asn Pro Ile Tyr Met Leu
 305 310 315 320

Phe Ile Leu Val Ser Val Ile Gln Phe Asn Ala Phe Val Asn Met Ile
 325 330 335

Ser Phe Met Pro Lys Tyr Leu Glu Gln Gln Tyr Gly Ile Ser Ser Ser
 340 345 350

Asp Ala Ile Phe Leu Met Gly Ile Tyr Asn Leu Pro Pro Ile Cys Ile
 355 360 365

Gly Tyr Ile Ile Gly Gly Leu Ile Met Lys Lys Phe Lys Ile Thr Val
 370 375 380

Lys Gln Ala Ala His Ile Gly Cys Trp Leu Ser Leu Leu Glu Tyr Leu
 385 390 395 400

Leu Tyr Phe Leu Ser Phe Leu Met Thr Cys Glu Asn Ser Ser Val Val
 405 410 415

Gly Ile Asn Thr Ser Tyr Glu Gly Ile Pro Gln Asp Leu Tyr Val Glu
 420 425 430

Asn Asp Ile Phe Ala Asp Cys Asn Val Asp Cys Asn Cys Pro Ser Lys
 435 440 445

Ile Trp Asp Pro Val Cys Gly Asn Asn Gly Leu Ser Tyr Leu Ser Ala
 450 455 460

Cys Leu Ala Gly Cys Glu Thr Ser Ile Gly Thr Gly Ile Asn Met Val
 465 470 475 480

Phe Gln Asn Cys Ser Cys Ile Gln Thr Ser Gly Asn Ser Ser Ala Val
 485 490 495

Leu Gly Leu Cys Asp Lys Gly Pro Asp Cys Ser Leu Met Leu Gln Tyr
 500 505 510

Phe Leu Ile Leu Ser Ala Met Ser Ser Phe Ile Tyr Ser Leu Ala Ala
 515 520 525

Ile Pro Gly Tyr Met Val Leu Leu Arg Cys Met Lys Ser Glu Glu Lys
 530 535 540

Ser Leu Gly Val Gly Leu His Thr Phe Cys Thr Arg Val Phe Ala Gly
 545 550 555 560

Ile Pro Ala Pro Ile Tyr Phe Gly Ala Leu Met Asp Ser Thr Cys Leu
 565 570 575

His Trp Gly Thr Leu Lys Cys Gly Glu Ser Gly Ala Cys Arg Ile Tyr
 580 585 590

Asp Ser Thr Thr Phe Arg Tyr Ile Tyr Leu Gly Leu Pro Ala Ala Leu
 595 600 605

Arg Gly Ser Ser Phe Val Pro Ala Leu Ile Ile Leu Ile Leu Leu Arg
 610 615 620

Lys Cys His Leu Pro Gly Glu Asn Ala Ser Ser Gly Thr Glu Leu Ile

Asn	Pro	Gln	Lys	Glu	Thr	Ser	Ser	Met	Trp	Gly	Leu	Met	Val	Val	Ala	
				165					170					175		
Gln	Leu	Leu	Ala	Gly	Ile	Gly	Thr	Val	Pro	Ile	Gln	Pro	Phe	Gly	Ile	
			180					185					190			
Ser	Tyr	Val	Asp	Asp	Phe	Ser	Glu	Pro	Ser	Asn	Ser	Pro	Leu	Tyr	Ile	
		195					200					205				
Ser	Ile	Leu	Phe	Ala	Ile	Ser	Val	Phe	Gly	Pro	Ala	Phe	Gly	Tyr	Leu	
	210					215					220					
Leu	Gly	Ser	Ile	Met	Leu	Gln	Ile	Phe	Val	Asp	Tyr	Gly	Arg	Val	Asn	
225					230					235					240	
Thr	Ala	Ala	Val	Asn	Leu	Val	Pro	Gly	Asp	Pro	Arg	Trp	Ile	Gly	Ala	
				245					250					255		
Trp	Trp	Leu	Gly	Leu	Leu	Ile	Ser	Ser	Ala	Leu	Leu	Val	Leu	Thr	Ser	
			260					265						270		
Phe	Pro	Phe	Phe	Phe	Phe	Pro	Arg	Ala	Met	Pro	Ile	Gly	Ala	Lys	Arg	
		275					280					285				
Ala	Pro	Ala	Thr	Ala	Asp	Glu	Ala	Arg	Lys	Leu	Glu	Glu	Ala	Lys	Ser	
	290					295					300					
Arg	Gly	Ser	Leu	Val	Asp	Phe	Ile	Lys	Arg	Phe	Pro	Cys	Ile	Phe	Leu	
305					310					315					320	
Arg	Leu	Leu	Met	Asn	Ser	Leu	Phe	Val	Leu	Val	Val	Leu	Ala	Gln	Cys	
				325					330					335		
Thr	Phe	Ser	Ser	Val	Ile	Ala	Gly	Leu	Ser	Thr	Phe	Leu	Asn	Lys	Phe	
			340					345					350			
Leu	Glu	Lys	Gln	Tyr	Gly	Thr	Ser	Ala	Ala	Tyr	Ala	Asn	Phe	Leu	Ile	
		355					360					365				
Gly	Ala	Val	Asn	Leu	Pro	Ala	Ala	Ala	Leu	Gly	Met	Leu	Phe	Gly	Gly	
	370					375					380					

Ile Leu Met Lys Arg Phe Val Phe Ser Leu Gln Thr Ile Pro Arg Ile
 385 390 395 400

Ala Thr Thr Ile Ile Thr Ile Ser Met Ile Leu Cys Val Pro Leu Phe
 405 410 415

Phe Met Gly Cys Ser Thr Pro Thr Val Ala Glu Val Tyr Pro Pro Ser
 420 425 430

Thr Ser Ser Ser Ile His Pro Gln Ser Pro Ala Cys Arg Arg Asp Cys
 435 440 445

Ser Cys Pro Asp Ser Ile Phe His Pro Val Cys Gly Asp Asn Gly Ile
 450 455 460

Glu Tyr Leu Ser Pro Cys His Ala Gly Cys Ser Asn Ile Asn Met Ser
 465 470 475 480

Ser Ala Thr Ser Lys Gln Leu Ile Tyr Leu Asn Cys Ser Cys Val Thr
 485 490 495

Gly Gly Ser Ala Ser Ala Lys Thr Gly Ser Cys Pro Val Pro Cys Ala
 500 505 510

His Phe Leu Leu Pro Ala Ile Phe Leu Ile Ser Phe Val Ser Leu Ile
 515 520 525

Ala Cys Ile Ser His Asn Pro Leu Tyr Met Met Val Leu Arg Val Val
 530 535 540

Asn Gln Glu Glu Lys Ser Phe Ala Ile Gly Val Gln Phe Leu Leu Met
 545 550 555 560

Arg Leu Leu Ala Trp Leu Pro Ser Pro Ala Leu Tyr Gly Leu Thr Ile
 565 570 575

Asp His Ser Cys Ile Arg Trp Asn Ser Leu Cys Leu Gly Arg Arg Gly
 580 585 590

Ala Cys Ala Tyr Tyr Asp Asn Asp Ala Leu Arg Asp Arg Tyr Leu Gly
 595 600 605

Leu Gln Met Gly Tyr Lys Ala Leu Gly Met Leu Leu Leu Cys Phe Ile

610

615

620

Ser Trp Arg Val Lys Lys Asn Lys Glu Tyr Asn Val Gln Lys Ala Ala
 625 630 635 640

Gly Leu Ile

<210> 29
 <211> 384
 <212> PRT
 <213> Artificial

<220>
 <223> Consensus Sequence

<400> 29

Gly Glu Ala Cys Phe Ile Lys Phe Leu Leu Ala Leu Ala Leu Gly Tyr
 1 5 10 15

Met Ser Leu Thr Gln Ile Glu Arg Arg Phe Ile Ser Ser Val Gly Leu
 20 25 30

Ile Gly Ser Phe Glu Ile Gly Asn Leu Leu Leu Ile Phe Val Ser Tyr
 35 40 45

Phe Gly Lys Leu His Arg Pro Ile Gly Gly Cys Met Gly Leu Gly Leu
 50 55 60

Leu Pro His Phe Leu Met Gly Tyr Glu Tyr Glu Asn Ser Leu Cys Asn
 65 70 75 80

Ser Leu Pro Asp Glu Cys Lys Glu Ser Leu Met Trp Ile Tyr Val Val
 85 90 95

Gly Asn Ile Leu Arg Gly Ile Gly Glu Thr Pro Ile Pro Leu Gly Ile
 100 105 110

Ser Tyr Ile Asp Asp Phe Ala Lys Glu Asn Ser Pro Leu Tyr Ile Gly
 115 120 125

Ile Leu Thr Gly Pro Gly Leu Leu Gly Ser Cys Ala Ile Tyr Val Asp
 130 135 140

Gly Val Asn Thr Asp Leu Ile Thr Pro Asp Pro Arg Trp Val Gly Ala
 145 150 155 160

Trp Trp Gly Phe Leu Cys Ala Gly Leu Ser Ile Pro Phe Phe Phe Phe
 165 170 175

Pro Lys Leu Pro Lys Gly Val Lys Asp Phe Lys Leu Leu Asn Pro Tyr
 180 185 190

Leu Leu Val Gln Asn Gly Thr Phe Leu Pro Lys Tyr Leu Glu Gln Gln
 195 200 205

Tyr Gly Ser Ser Ala Phe Leu Gly Leu Pro Cys Gly Gly Gly Ile Met
 210 215 220

Lys Lys Phe Lys Val Ala Ala Leu Ala Ser Leu Tyr Leu Leu Phe Cys
 225 230 235 240

Asn Val Ala Gly Leu Thr Ser Tyr Gly Glu Ala Asp Cys Asn Cys Ser
 245 250 255

Cys Trp Pro Val Cys Gly Asn Gly Tyr Ser Ala Cys Leu Ala Gly Cys
 260 265 270

Ser Gly Thr Gly Asn Val Phe Asn Cys Ser Cys Ile Gly Asn Ser Ser
 275 280 285

Ala Val Leu Gly Cys Lys Pro Cys Leu Tyr Phe Leu Ser Phe Ile Ser
 290 295 300

Leu Ile Pro Gly Tyr Met Val Leu Arg Cys Val Lys Glu Glu Lys Ser
 305 310 315 320

Leu Ala Gly His Arg Leu Ala Gly Ile Pro Ala Pro Ile Tyr Phe Gly
 325 330 335

Ala Leu Ile Asp Thr Cys Leu His Trp Gly Thr Cys Gly Gly Ala Cys
 340 345 350

Arg Tyr Asp Phe Arg Tyr Leu Gly Leu Ala Leu Arg Ser Leu Ile Leu
 355 360 365

Leu Arg Lys Pro Ile Ser Ser Glu Lys Glu Ser Thr His Asp Glu Thr

370

375

380